

RECEIVED
CENTRAL FAX CENTER

JAN 03 2007

Appl. No. 10/734,318
Amtdt dated January 3, 2007**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 (Previously presented): A method for enhancing printability of a complementary mask in a sub-wavelength photolithographic process, the method comprising:

receiving data corresponding to a complementary mask;

wherein the complementary mask is designed for use with a phase shifting mask;

wherein a pattern represented by said data of the complementary mask defines a number of openings that expose unwanted photoresist located between regions exposed via the phase shifting mask during the sub-wavelength photolithographic process;

identifying from among said openings, a plurality of critical openings as being too small to print due to intensity of radiation passing therethrough being ineffective in exposing said unwanted photoresist during the sub-wavelength photolithographic process;

determining a threshold intensity for radiation passing through the plurality of critical openings during the sub-wavelength photolithographic process, to be effective in erasing the unwanted photoresist;

modifying at least a portion of the data representing the plurality of critical openings such that each of the plurality of critical openings will provide radiation of at least the threshold intensity during the sub-wavelength photolithographic process.

SILICON VALLEY
PATENT GROUP LLP
40 Mission College Blvd.
Suite 360
Santa Clara, CA 95054
(408) 982-8200
FAX (408) 982-8210

Appl. No. **10/734,318**
Amdt dated January 3, 2007

2 (Previously presented): The method of claim 1, wherein modifying comprises:
increasing the area of at least one opening in said plurality of critical openings.

3 (Previously presented): The method of claim 2, wherein:
the increase in area is substantially proportional to the difference between:
a maximum intensity of radiation passing through the opening
prior to increasing; and
said threshold intensity.

4 (Currently amended): The method of claim 2, wherein:
wherein said at least one opening is defined by a group of edges in said pattern;
and
the increase in area is accomplished by moving an edge in said group that does not
abut any feature to be printed in an integrated circuit by use of the phase shifting mask,
while maintaining unmoved any edge in the group that abuts said feature to be printed.

Claim 5 (canceled).

6 (Previously presented): The method of claim 1 wherein identifying comprises:
modeling exposures through a phase shifting mask and the complementary mask to
produce a result; and
examining the result.

SILICON VALLEY
PATENT GROUP LLP
10 Mission College Blvd.
Suite 360
Santa Clara, CA 95054
(408) 982-8210
FAX (408) 982-8210

Appl. No. **10/734,318**
Amdt dated January 3, 2007

7 (Previously presented): The method of claim 1 wherein the modifying comprises:
simplifying a complex shape of at least one critical opening into a basic shape
having fewer edges.

Claims 8-22 (canceled).

23 (Previously presented): The method of claim 1 wherein:
each critical opening is sufficiently small to be modeled by a pin hole.

24 (Previously presented): A method for enhancing printability of a mask in a sub-wavelength photolithographic process, the method comprising:
receiving data corresponding to a mask;
identifying at least one opening in a pattern represented by the data, for being ineffective in allowing radiation passing therethrough to print said opening on photoresist, during the sub-wavelength photolithographic process;
wherein said opening is defined by a group of edges in said pattern;
modifying at least a portion of said data representing said opening, to allow passage therethrough of radiation sufficient to print said opening;

SILICON VALLEY
PATENT GROUP LLP
10 Mission College Blvd
Suite 360
Santa Clara, CA 95054
(408) 982-8210
FAX (408) 982-8210

Appl. No. **10/734,318**
Amdt dated January 3, 2007

wherein the modifying comprises moving an edge in said group that does not abut any feature to be printed in an integrated circuit while maintaining unmoved any edge in the group that abuts said feature to be printed.

25 (Previously presented): The method of claim 24 further comprising:

generating an aerial image of the mask;

wherein the critical openings have areas too small to generate at least a predetermined maximum intensity of radiation in said aerial image.

26 (Previously presented): A method for enhancing printability of a mask in a photolithographic process, the method comprising:

receiving data corresponding to a mask;

identifying at least one opening in a pattern represented by the data, for ineffectiveness of radiation passing therethrough, to print said opening on photoresist during the photolithographic process;

wherein said opening is defined by a group of edges in said pattern;

modifying at least a portion of said data representing said opening, to allow passage therethrough of radiation sufficient to print the said opening on photoresist;

wherein the modifying comprises simplifying a complex shape of said opening into a basic shape having fewer edges.

SILICON VALLEY
PATENT GROUP LLP
10 Mission College Blvd.
Suite 360
Santa Clara, CA 95054
(408) 982-8220
FAX (408) 982-8210